

1           **1. A telecommunications network comprising:**

2           a first SONET/SDH ring that comprises a first plurality of nodes, wherein said first  
3 SONET/SDH ring defines a first address space and wherein each of said first plurality of nodes is  
4 identified by a unique address in said first address space; and

5           a second SONET/SDH ring that comprises a second plurality of nodes, wherein second  
6 SONET/SDH ring defines a second address space and wherein each of said second plurality of nodes  
7 is identified by a unique address in said second address space;

8           wherein there are at least two nodes that have an address in the address space of said first  
9 SONET/SDH ring and an address in the address space of said second SONET/SDH ring.

1           **2. The telecommunications network of claim 1 further comprising an optical fiber that carries**  
2 **a first STS-N that comprises:**

3           (1) a second STS-1 that is associated with said first SONET/SDH ring, and

4           (2) a third STS-1 that is associated with said second SONET/SDH ring.

1           **3. The telecommunications network of claim 1 further comprising an optical fiber that carries**  
2 **a first STS-N that comprises:**

3           (1) a first automatic protection switching channel that is associated with said first  
4 SONET/SDH ring, and

5           (2) a second automatic protection switching channel that is associated with said second  
6 SONET/SDH ring.

1           **4. The telecommunications network of claim 1 further comprising an optical fiber that carries**  
2 **a first STS-N that comprises:**

3           (1) the  $K_1$  and  $K_2$  line overhead bytes that are associated with said first SONET/SDH ring, and

4           (2) the  $K_1$  and  $K_2$  line overhead bytes that are associated with said second SONET/SDH ring.

1           **5. A telecommunications network comprising:**

2           a first SONET/SDH ring; and

3           a second SONET/SDH ring;

4           an optical fiber that carries:

5           (1) a first STS-1 that is associated with said first SONET/SDH ring, and

6           (2) a second STS-1 that is associated with said second SONET/SDH ring.

1           **6. A telecommunications network comprising:**

2           a first SONET/SDH ring; and

3 a second SONET/SDH ring;

4 an optical fiber that carries:

5 (1) a first automatic protection switching channel that is associated with said first  
6 SONET/SDH ring, and

7 (2) a second automatic protection switching channel that is associated with said second  
8 SONET/SDH ring.

1 7. A telecommunications network comprising:

2 a first SONET/SDH ring; and

3 a second SONET/SDH ring;

4 an optical fiber that carries:

5 (1) the  $K_1$  and  $K_2$  line overhead bytes that are associated with said first SONET/SDH ring,  
6 and

7 (2) the  $K_1$  and  $K_2$  line overhead bytes that are associated with said second SONET/SDH  
8 ring.

1 8. A system comprising:

2 a first optical fiber that is associated with a first SONET/SDH ring;

3 a second optical fiber that is associated with a second SONET/SDH ring;

4 a third optical fiber;

5 a fourth optical fiber that is associated with said first SONET/SDH ring;

6 a fifth optical fiber that is associated with said second SONET/SDH ring;

7 a first SONET/SDH node for receiving a first STS-N from said first optical fiber, for receiving  
8 a second STS-N from said second optical fiber, and for transmitting said first STS-N and said second  
9 STS-N via said third optical fiber; and

10 a second SONET/SDH node for receiving said first STS-N and said second STS-N from said  
11 third optical fiber, for transmitting said first STS-N via said fourth optical fiber, and for transmitting  
12 said second STS-N via said fifth optical fiber.

1 9. The system of claim 8 wherein said third optical fiber carries automatic protection  
2 switching signaling for both said first SONET/SDH ring and said second SONET/SDH ring.

1 10. A SONET/SDH node comprising:

2 a first input port for receiving a first automatic protection switching channel from a first  
3 optical fiber that is associated with a first SONET/SDH ring;

4 a second input port for receiving a second automatic protection switching channel from a  
5 second optical fiber that is associated with a second SONET/SDH ring;  
6 a multiplexor for multiplexing said first automatic protection switching channel and said  
7 second automatic protection switching channel into one STS-N frame; and  
8 a output port for transmitting said STS-N frame via a third optical fiber.

1 **11. A SONET/SDH node comprising:**

2 an input port for receiving a STS-N frame from a first optical fiber;  
3 a demultiplexor for demultiplexing a portion of first automatic protection switching channel  
4 that is associated with a first SONET/SDH ring and a portion of second automatic protection  
5 switching channel that is associated with a second SONET/SDH ring from said STS-N frame;  
6 a first output port for transmitting said portion of first automatic protection switching channel  
7 via a second optical fiber that is associated with said first SONET/SDH ring; and  
8 a second output port for transmitting said portion of second automatic protection switching  
9 channel via a third optical fiber that is associated with said second SONET/SDH ring.

1 **12. A method of operating a time-division multiplexed telecommunications system, said**  
2 **method comprising:**

3 receiving a first optical carrier signal that comprises a first source address and a first  
4 destination address in a first address space;  
5 receiving a second optical carrier signal that comprises a first source address and a first  
6 destination address in a second address space;  
7 multiplexing said first optical carrier signal and said second optical carrier signal into a frame;  
8 and  
9 transmitting said frame;  
10 wherein said first optical carrier signal in said frame comprises a second source address and a  
11 second destination address in said first address space; and  
12 wherein said second optical carrier signal in said frame comprises a second source address and  
13 a second destination address in said second address space.

1 **13. The method of claim 12 further comprising:**

2 receiving said frame;  
3 demultiplexing said first optical carrier signal and said second optical carrier signal from said  
4 frame;

transmitting said first optical carrier signal, wherein said first optical carrier signal as transmitted comprises a third source address and a third destination address in said first address space; and

transmitting said second optical carrier signal, wherein said second optical carrier signal as transmitted comprises a fourth source address and a fourth destination address in said second address space.

**14.** A method of operating a time-division multiplexed telecommunications system, said method comprising:

receiving a frame that comprises (1) a first optical carrier signal that comprises a first source address and a first destination address in a first address space, and (2) a second optical carrier signal that comprises a first source address and a first destination address in a second address space;

demultiplexing said first optical carrier signal and said second optical carrier signal from said frame;

transmitting said first optical carrier signal, wherein said first optical carrier signal as transmitted comprises a second source address and a second destination address in said first address space; and

transmitting said second optical carrier signal, wherein said second optical carrier signal as transmitted comprises a second source address and a second destination address in said second address space.

**15.** The method of claim 14 further comprising:

receiving a first optical carrier signal that comprises a third source address and a third destination address in a first address space;

receiving a second optical carrier signal that comprises a fourth source address and a fourth destination address in a second address space;

multiplexing said first optical carrier signal and said second optical carrier signal into said frame; and

transmitting said frame;

wherein said first optical carrier signal in said frame comprises said first source address and said first destination address in said first address space; and

wherein said second optical carrier signal in said frame comprises said first source address and said first destination address in said second address space.